

CLAIMS

What is claimed is:

1. A method for generating a modified packet for output from a
5 router, comprising:

storing a received packet in a first memory;
computing modified bytes corresponding to said packet;
storing said modified bytes in a second memory;
multiplexing select unmodified bytes corresponding to said packet

- 10 stored in said first memory with said modified bytes in said second
memory to generate said modified packet.

2. The method of Claim 1 further comprising:
pre-computing said modified bytes and storing pre-computed
15 modified bytes in said second memory.

3. The method of Claim 1 further comprising:
adaptively modifying selected bytes of said packet in accordance
with a pre-determined format of said packet.

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4. The method of Claim 1 further comprising:
storing an unmodified Length, an unmodified IP Source Address,
an unmodified IP Destination Address, and unmodified Data in said first
memory;
25 storing a modified Destination Address, a modified Source Address,
a modified Time-to-Live, and a modified Checksum in said second
memory;

selectively outputting said modified Destination Address, said modified Source Address, said unmodified Length, said unmodified IP Source Address, said unmodified IP Destination Address, said modified Time-to-Live, said modified Checksum, and said unmodified Data.

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5. A device comprising:

a first memory for storing an incoming packet;

a processor coupled to said first memory which computes modified bytes corresponding to pre-determined fields of said packet;

10 a second memory coupled to said first memory, wherein said modified bytes are stored in said second memory;

a multiplexer coupled to said first memory and said second memory, wherein said multiplexer multiplexes bytes selected from either said first memory or said second memory.

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6. The device of Claim 5 further comprising a controller coupled to said multiplexer, wherein said controller specifies whether bytes from said first memory or bytes from said second memory are to be selected for output.

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7. The device of Claim 6, wherein said controller adaptively controls said multiplexer according to a pre-determined format corresponding to said packet.

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8. The device of Claim 5, wherein said multiplexer selects bytes corresponding to those fields of said packet which need to be modified from said second memory and said multiplexer selects bytes corresponding

to those fields of said packet which do not need to be modified from said first memory.

9. The device of Claim 5, wherein said first memory contains an
5 unmodified Length, an unmodified IP Source Address, an unmodified IP Destination Address, and unmodified Data; and

wherein said second memory contains a modified Destination Address, a modified Source Address, a modified Time-to-Live, and a modified Checksum.

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10. The device of Claim 9, wherein said multiplexer outputs a modified packet comprised of said modified Destination Address, said modified Source Address, said unmodified Length, said unmodified IP Source Address, said unmodified IP Destination Address, said modified
15 Time-to-Live, said modified Checksum, and said unmodified Data.

11. The device of Claim 5, wherein said processor pre-computes said modified bytes.

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12. A method for outputting a modified packet, comprising:
storing a received packet in a first memory location, wherein said packet comprises a plurality of fields, each of said fields having an associated value;

generating modified values corresponding to pre-determined fields
25 of said received packets;

storing said modified values in a second memory location which is different from where unmodified values of said packet is stored in said first memory location;

- selecting either said modified values from said second memory
5 location or unmodified values of said packet from said first memory location for output.

13. The method of Claim 12, wherein said selecting is performed by switching between an unmodified value in said first memory and a
10 modified value in said second memory.

14. The method of Claim 12, wherein said second memory contains a plurality of pre-computed modified values.

15. An apparatus for routing a packet, comprising:
means for buffering a received packet;
means for calculating a different value for one field of said received
packet;
means for selecting either an original value of said packet for
20 output or said different value for output.

16. The apparatus of Claim 15 further comprising means for retaining both said original value corresponding to said field of said received packet and said different value also corresponding to said field of
25 said received packet.

17. The apparatus of Claim 15 further comprising means for pre-computing said different value.

18. The apparatus of Claim 15 further comprising means for
5 generating modified packets without overwriting packet data.